

BATS OF MONTANA¹

David L. Genter and Katharine A. Jurist
Montana Natural Heritage Program
1515 East Sixth Avenue
Helena, Montana 59620-1800

Montana is within the known range of 15 species of bats, representing one family and seven genera. All are insectivorous, preying upon nocturnal insects with highly evolved echolocation and foraging behavior. Some species are migratory, flying south for the winter (e.g.: *Lasiurus cinereus*, *Lasionycteris noctivagans*), while others flock to local caves or mines for the lengthy winter hibernation (e.g.: *Myotis spp.*, *Plecotus townsendii*, *Eptesicus fuscus*). Nonetheless, migratory and wintering habits are poorly understood for many species.

The European colonization of Montana brought many changes which influenced bat population and distribution in the state. Buildings, mines, bridges, and other structures have created suitable roost habitat for some species. Alternately, deforestation, loss of riparian habitat, and recreation or vandalism in caves has eliminated significant habitat. Some species appear to have fared well in coexisting with such developments, while others clearly have not.

This brief synopsis of Montana's bats is intended to provide an overview of the species' status, appearance, distribution, and habitat. Additional information will be provided during the lecture and discussion, along with other handouts and references. Individuals who are actively working on bat studies in Montana should contact the Montana Natural Heritage Program and the Nongame Program of the Montana Department of Fish, Wildlife, and Parks in order to facilitate the appropriate exchange of information regarding the status and distribution of Montana's bats and also to assure compliance with required permits and regulations.

Little Brown Myotis--*Myotis lucifugus*

MTHP rank: G5/S5

USFS: None

USFWS: None

Size:

Total length: 87.2 mm (3.43 in.)

Tail length: 37.4 mm (1.47 in.)

Forearm length: 37 mm (1.46 in.)

Wingspan: 220-270 mm (8.66-10.63 in.)

Weight: 7.9 g

Description: One of the most common of North American bats. Sleek and glossy pelage; dorsal color dark brown to buffy brown, often with a metallic, coppery sheen; paler ventral coloration, frequently with a slight grayish tinge; ears slender, naked, and rounded; tragus short and blunt; wings and uropatagium naked except along their proximal margins; calcar not keeled; skull lacks distinct sagittal crest.

Similar species: *Myotis yumanensis* has dull, shorter fur, paler ears and skull with more steeply sloping forehead, and is smaller. *M. volans* has small keel on calcar, ventrum nearly the same color as dorsum, and relatively dense fur on ventral surface of plagiopatagium to a line between elbow and knee.

Distribution: Widely distributed in Canada from the Atlantic to the Pacific coast to the limits of the boreal forest. In the United States, it is found in southern Alaska and the greater part of the lower 48 states, and south to the

¹ Summary information prepared by D. L. Genter and K. Jurist, Montana Natural Heritage Program, Helena, for *Assessing Mines for Bats Workshop*--June 14-15, 1995, Helena, Montana. Hosted by the Montana Department of State Lands, Abandoned Mine Reclamation Bureau. 1995 Montana Natural Heritage Program.

central highlands of Mexico. Found throughout Montana.

Habitat: Lives nearly anywhere that some trees and water are found.

Roosts: Roosts in natural cavities, under loose bark, and in crevices, as well as in buildings, where it may be found in attics, behind shutters or siding, or under shingles.

Foraging: Forages over bluffs, lakes, and among trees.

Maternity colonies: Usually in buildings near trees and water.

Hibernacula: Caves or mines.

Migratory characteristics: May move several hundred kilometers from its summer roosts to reach hibernacula in locations of high humidity and above-freezing temperatures.

Echolocation characteristics: Curved sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds. Inflection point near the middle of the call.

Conservation needs: Public education regarding value of bats.

Yuma Myotis--*Myotis yumanensis*

MTHP rank: G5/S3 ⚠Watch species

USFS: None

USFWS: C2

Size:

Total length: 83 mm (3.27 in.)

Tail length: 36.1 mm (1.42 in.)

Forearm length: 35.3 mm (1.39 in.)

Wingspan: 220-270 mm (.87-1.06 in.)

Weight: 4.9 g

Description: Closely resembles *Myotis lucifugus*. Size somewhat smaller, pelage duller, usually without characteristic sheen and shorter; longer hairs on dorsum, blackish, reddish-brown or pale brown; paler ears; skull similar but smaller, usually with deeply sloping forehead; baculum in dorsal aspect, triangular, distal tip rounded, base enlarged to knob, with ventral groove.

Similar species: *Myotis lucifugus* has longer, glossy pelage with basal fur on shoulders usually darker; ears and naked parts of face darker; skull with flatter forehead. (Also see comments under *M. lucifugus*).

Distribution: Western North America from British Columbia to central Mexico. In Canada, the species is not found east of the Rocky Mountains. Widely distributed in western Montana but having a very limited occurrence east of the Continental Divide.

Habitat: Similar to that of *Myotis lucifugus*, only with greater affinity for water, in more open areas, and with less dependence on trees.

Roosts: Similar to those of *Myotis lucifugus*.

Foraging: Low over flowing water.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Curved sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds. Inflection point near the middle of the call.

Conservation needs: Public education regarding the value of bats.

Long-Legged Myotis--*Myotis volans*

MTHP rank: G5/S4 ⚠Watch species

USFS: None

USFWS: C2

Size:

Total length: 95.5 mm (3.76 in.)

Tail length: 42.1 mm (1.66 in.)

Forearm length: 39 mm (1.54 in.)

Wingspan: 250-270 mm (9.84-10.63 in.)

Weight: 7.5 g

Description: Pelage relatively long and soft, extending distally onto the tail membrane and in some specimens onto the underside of the wing membrane to the level of the elbow; dorsal pelage varies from smoke brown to chocolate brown; tips of individual hairs slightly burnished; underparts vary from smoke brown to dull yellowish brown, washed in

buff; ears are low, rounded, and do not reach the nose when laid forward; calcar distinctly keeled.

Similar species: *Myotis lucifugus* lacks a keel on the calcar, has longer ears, which reach the nostrils when laid forward, has a braincase that rises gradually from the rostrum, and usually is somewhat paler in color.

Distribution: Canada's mountainous west and throughout the western United States east to the westernmost portions of the Dakotas and Nebraska, Colorado, western Texas, and south to central Mexico. Probably occurs throughout Montana over a wide elevational range.

Habitat: Inhabits forested mountain regions.

Roosts: In trees, rock crevices, cracks, and crevices in stream banks and in buildings; caves serve as night roosts.

Foraging: Forages over woodland meadows or watercourses.

Maternity colonies: Similar to roosts, most often situated in trees.

Hibernacula: In caves and mines.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds. Call has no inflection point.

Conservation needs: Public education regarding the value of bats.

Northern Myotis--*Myotis septentrionalis*

MTHP rank: G4/S2 Species of Special Concern

USFS: None

USFWS: None

Size:

Total length: 86.2 mm (3.39 in.)

Tail length: 37.7 mm (1.48 in.)

Forearm length: 36.4 mm (1.43 in.)

Wingspan: 230-260 mm (9.06-10.24 in.)

Weight: 7.4 g

Description: Fur brown, similar to sympatric *Myotis lucifugus*, but tips of guard hairs not so glossy; dark-brown shoulder spot lacking; free edge of uropatagium bare or with only sporadic hairs; flight membranes and ears brown; ears long, pressed forward, extending beyond the rhinarium; tragus slender, straight, and pointed; foot relatively large, ca. half as long as tibia; calcar slightly keeled and a little longer than free border of uropatagium; third to fifth metacarpal ca. equal in length; skull narrow, with relatively long rostrum, maxillary tooththrow usually exceeding width across molars; baculum ca. 0.9 mm (0.04 in.) long, similar to that of *M. lucifugus*.

Similar species: *Myotis evotis* has black, longer ears, extending 5 mm (0.20 in.) or more beyond nose when pressed forward; color is lighter with dark shoulder spots; inconspicuous fringe on free edge of uropatagium usually present. *M. lucifugus* has shorter ears, not extending beyond nose when pressed forward.

Distribution: Found from the Atlantic to British Columbia and north to the southern Northwest Territories. Also occurs in the eastern United States south to northern Florida and west to a line running from eastern Oklahoma through Kansas, Nebraska, and extreme northeastern Wyoming to western North Dakota. Species is peripheral to eastern Montana, associated with the lower Missouri River; existing records are from Richland County.

Habitat: Mixed and coniferous forests.

Roosts: Singly under loose bark of trees and occasionally behind window shutters.

Foraging: Forages over small woodland pools and streams, along roads and clearings within and under the forest canopy.

Hibernacula: In caves.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Short, straight sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds; no constant-frequency tail.

Conservation needs: Public education regarding the value of bats.

Long-Eared Myotis--*Myotis evotis*

MTHP rank: G5/S4 Watch species

USFS: None

USFWS: C2

Size:

Total length: 93.1 mm (3.67 in.)

Tail length: 42.5 mm (1.67 in.)

Forearm length: 38.6 mm (1.52 in.)

Wingspan: 250-290 mm (9.84-11.42 in.)

Weight: 6.7 g

Description: Pelage long and soft; color variable, light brown to pale yellowish-brown with blackish-brown shoulder spots, free border of uropatagium with inconspicuous fringe of minute hairs; flight membranes and ears blackish; ears very long and pressed forward, extending 5 mm or more beyond nose; tragus long and slender with tip bent slightly outward, a small rounded lobe at its outer base; foot usually somewhat less than half the length of the tibia, calcar extending to point about halfway between foot and tip of tail, calcar usually not keeled, but sometimes with rudimentary keel ending in small lobule; metacarpals subequal.

Similar species: *Myotis septentrionalis* has shorter and lighter ears, extending less than 5 mm (0.20 in.) beyond nose when pressed down; no dark shoulder spots; free edge of uropatagium bare. *M. thysanodes* usually has conspicuous dense fringe of stiff hairs on free edge of uropatagium and longer forearm.

Distribution: Western Canada and widely distributed in the western United States south to New Mexico, Arizona, and southern California to the Baja peninsula. Widespread and probably found throughout the entire state of Montana, most commonly in the coniferous forests.

Habitat: Forested areas, river valleys and coulees where rock outcrops provide shelter are suitable habitat for this species.

Roosts: Day roosts are under loose bark, in hollow trees, and rock crevices of fissures in clay banks. Night roosts include caves and mines.

Foraging: Forages between treetops and over woodland ponds.

Hibernacula: No information available.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Short, straight sweep from 97 to 54 or 48 kHz, lasting 3 milliseconds maximum; has no constant-frequency tail. **NOTE:** This is the only *Myotis* species which can be easily distinguished from others in the genus using echolocation characteristics.

Conservation needs: Public education regarding the value of bats.

Fringed Myotis--*Myotis thysanodes*

MTHP rank: G5/S3 Species of Special Concern

USFS: None

USFWS: C2

Size:

Total length: 89.8 mm (3.54 in.)

Tail length: 41.5 mm (1.63 in.)

Forearm length: 41.4 mm (1.63 in.)

Wingspan: 270-300 mm (10.63-11.81 in.)

Weight: 7.0 g

Description: Dorsal pelage varies from medium brown to pale buff with individual hairs being grayish black basally; ventral pelage is paler; ears and membranes are blackish brown, contrasting with pelage; a fringe of pale, straw-colored hairs extends posteriorly 1.0-1.5 mm (0.04-0.06 in.) beyond edge of uropatagium.

Similar species: *Myotis evotis* has longer ears, with ratio of ear length to forearm length >0.50; fringe on free border of uropatagium is inconspicuous, consisting of small scattered hairs.

Distribution: Western United States west of the Rocky Mountains, extending very slightly into Canada. Also extends to the central highlands of Mexico south to Chiapas. In Montana, this species may be found in the southwestern portion of the state; records exist from Jefferson and Ravalli Counties.

Habitat: Found from open semi-desert area to dry ponderosa pine forest.

Roosts: Roosts in caves, mines, rock crevices, and buildings.

Foraging: Forages along watercourses or over standing water.

Migratory characteristics: Winter habits unknown.

Echolocation characteristics: Call sweeps down to 28-33 kHz in first 1-3 milliseconds, terminating in a nearly constant-frequency tail lasting 2-7 milliseconds. Initial sweep is variable, but nearly always present.

Conservation needs: Distribution and status need to be studied. Identification and protection of roost sites and hibernacula are necessary to maintain the species. Excess disturbance or over-collecting of colonies by spelunkers or biologists should be avoided.

California Myotis--*Myotis californicus*

MTHP rank: G5/S4

USFS: None

USFWS: None

Size:

Total length: 81.8 mm (3.22 in.)

Tail length: 36.7 mm (1.44 in.)

Forearm length: 33.3 mm (1.31 in.)

Wingspan: 220-230 mm (8.66-9.06 in.)

Weight: 4.3 g

Description: Fur full and long, not glossy, varying from dull dark or blackish brown to lighter reddish-brown; ears and flight membranes blackish; ears relatively long, extending beyond nose when laid forward; foot small, less than half as long as tibia; calcar less than half as long as distance from foot to tip of tail; distinct keel present; metacarpals subequal; skull delicate, characterized by steeply sloping forehead.

Similar species: *Myotis ciliolabrum* is pale yellow-brown, with contrasting black snout and facial hair, bare part of snout longer than width of nostrils; skull with flatter braincase, gently sloping forehead. All other *Myotis* differ in having a larger size and bigger feet.

Distribution: British Columbia and from southeastern Alaska through the western United States south to southern Mexico. Known from scattered sites in southwestern Montana and has also been collected east of the Continental Divide.

Habitat: Found over a wide range of habitats, from humid coastal forest to semidesert. In arid areas, it is usually found in the vicinity of water.

Roosts: Roosting sites may include buildings, rock crevices, hollow trees, mines, caves, or spaces under loose bark.

Foraging: Forages near vegetation, preferably near or over water close to the shore.

Hibernacula: Small number of individuals reported from caves and mines.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Short, straight sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds; no constant-frequency tail. **NOTE:** Most of the species in the *Myotis* genus are not distinguishable from one another using echolocation characteristics alone; this is with the exception of *Myotis evotis*, which can be distinguished.

Conservation needs: The species is most vulnerable at roost sites and hibernacula. Human-caused mortality or disturbance could reduce or extirpate the species at certain sites. Hibernacula and significant maternity roosts should be identified and protected.

Western Small-Footed Myotis--*Myotis ciliolabrum*

MTHP rank: G5/S4 Watch species

USFS: None

USFWS: C2

Size:

Total length: 84.9 mm (3.34 in.)

Tail length: 39.2 mm (1.54 in.)

Forearm length: 32.2 mm (1.27 in.)

Wingspan: 210-250 mm (8.27-9.84 in.)

Weight: 5.3 g

Description: Fur is dense and long, lacking any pronounced sheen; color varies from pale yellow-brown to flaxen on the back, and from buff to nearly white ventrally; flight membranes, ears and face contrasting black; ears are

relatively long, reaching or exceeding tip of nose when laid forward; tragus slender, tapering, about half as long as ear; foot small, less than half as long as tibia, calcar with distinct keel; metacarpals subequal; skull small, forehead gently sloping; baculum saddle-shaped and concave ventrally.

Similar species: Sympatric *Myotis californicus* has dark or reddish-brown fur, without contrasting black snout and facial hair; bare part of snout about as long as width of nostrils in dorsal aspect; skull with more steeply sloping forehead.

Distribution: Arid regions of western Canada, short-grass prairies of Alberta and Saskatchewan, and valleys of southern British Columbia; found throughout the western United States, excepting the humid coastal areas, and south into Mexico. Found throughout most of Montana but probably not in extreme northwestern and northcentral portions of the state.

Habitat: Prefers arid habitats, where it is associated with cliffs/talus, and in prairies, with clay buttes and steep riverbanks.

Roosts: Roosts in crevices in rock faces and clay banks, and may use spaces beneath and between boulders in talus; has also been found under bark and in a barn.

Foraging: Forages along cliffs and rocky slopes.

Hibernacula: In caves and mines.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Short, straight sweep from >60 kHz to ca. 40 kHz, lasting about 5 milliseconds; no constant-frequency tail.

Conservation needs: Public education regarding the value of bats.

Silver-Haired Bat--*Lasionycteris noctivagans*

MTHP rank: G5/S4

USFS: None

USFWS: None

Size:

Total length: 97 mm (3.82 in.)

Tail length: 39.3 mm (1.55 in.)

Forearm length: 41.9 mm (1.65 in.)

Wingspan: 270-310 mm (10.63-12.20 in.)

Weight: 10.9 g

Description: Distinctly colored, with dorsal pelage being long and blackish brown, ~~the~~ frosted with silvery white, most conspicuously on the back; pelage in young bats is markedly darker than in adults, and whitish tips of the hairs are more conspicuous; membranes are blackish brown, and ears are short, rounded, and naked; wings are naked, but tail membrane is furred on upper surface; skull broad and flat, rostrum strongly concave.

Similar species: *Lasiurus cinereus* is larger, with the dorsal side of uroplagium heavily furred so that membrane cannot be seen.

Distribution: Widely distributed throughout Canada and found over most of the United States. Common in forested areas throughout Montana.

Habitat: A woodland bat.

Roosts: Has been found roosting in woodpecker holes and behind loose bark, preferably near ponds and streams.

Foraging: Forages over grassy valleys that contain a source of standing water and that are lined by forested hillsides.

Hibernacula: Hibernates in spaces under loose bark and hollow trees, rock crevices, sometimes buildings. Rarely hibernates in caves, but sometimes in silica mines.

Migratory characteristics: A migratory species over most of its range, it flies south between the middle of August and early October. The return migration in spring probably takes place from about the middle of April to early summer. There is evidence to suggest that females migrate farther north than the males, resulting in a geographical segregation of the sexes during the summer.

Echolocation characteristics: Call begins with a short (1-2 millisecond) sweep from >30 kHz to 25-28 kHz and ends with a long (10-14 millisecond) constant-frequency tail. Initial sweep may be absent.

Conservation needs: Public education regarding the value of bats.

Eastern Red Bat--*Lasiurus borealis*

MTHP rank: G5/SR (reported)

USFS: None

USFWS: None

Size:

Total length: 103.5 mm (4.07 in.)

Tail length: 46 mm (1.81 in.)

Forearm length: 39.7 mm (1.56 in.)

Wingspan: 280-330 mm (11.02-12.99 in.)

Weight: ca. 12.5 g

Description: Dorsal pelage ranges from bright reddish orange to chestnut, with males being more reddish than females; also in females, many of the dorsal hairs are tipped with white, creating a frosted appearance; distinctive yellowish white patch of hair on each shoulder; dorsal and ventral surfaces of wings are furred outward from body toward elbow, and dorsal surface of uropatagium is fully furred; hind feet are well-covered with hairs, and calcar is keeled; ventral pelage paler than dorsal; wing membranes brownish black, but forearms and phalanges are paler; ears are short, broad, rounded at the tip, and nearly naked inside on the rims, although hair is dense on the basal two-thirds of the ear and on its dorsal surface; tragus is triangular and broad at the base; skull is short, broad, and deep, the rostrum being nearly as broad as the braincase.

Similar species: *Lasiurus cinereus* differs in color and is noticeably larger.

Distribution: In Canada from the Maritimes to Saskatchewan; west to California in the United States and south to southern South America (Chile, Argentina); most abundant in the midwestern United States in the summer and found mostly in the southern states in the winter. Unknown distribution in Montana; known from single specimen in USNM collected on the Yellowstone in the 1800s.

Habitat: Open forested areas or farm shelter belts.

Roosts: Roosts almost exclusively in the foliage of trees. Sites from 1 to 6 m above the ground, in dense foliage, are usually selected for roosting; these sites provide cover all around but are open below, allowing the animal to simply drop down for its nightly foraging.

Foraging: Forages over open areas and along wooded borders before the sun has set.

Hibernacula: Does not hibernate in caves. Migrates and hibernates in foliage of trees, woodpecker holes, or under bark.

Migratory characteristics: Fall migration begins in late August and September and continues into October. Most bats return in May.

Echolocation characteristics: Call sweeps from 45 to 40 kHz and lasts 10 milliseconds.

Conservation needs: Status and distribution needs to be determined for eastern Montana and key habitats in woody draws need to be identified.

Hoary Bat--*Lasiurus cinereus*

MTHP rank: G5/S4

USFS: None

USFWS: None

Size:

Total length: 126.9 mm (5.00 in.)

Tail length: 55.1 mm (2.17 in.)

Forearm length: 56 mm (2.20 in.)

Wingspan: 340-410 mm (13.39-16.14 in.)

Weight: 27.6 g

Description: Ears are short, broad, and rounded, lightly furred and accentuated by a dark, naked border; tragus short and blunt; wings relatively long and narrow, making this species a strong flier; dorsal pelage varies from yellowish brown to mahogany, frosted with silver; hairs on neck are longer than those on the back, forming a slight ruff; wing is furred outward from the body to the level of the elbow, and the dorsal surface of the uropatagium is covered with hair; there is a yellowish white patch on each shoulder, sometimes more or less continuous across the chest, and a cream-colored spot near the wrist; skin of the wings and uropatagium is brownish black; feet are furred

above, calcar is moderately keeled; ventral pelage is paler than that above, whitish to yellowish brown; robust skull has broad, short rostrum that angles upward to a broad and heavy braincase; females somewhat larger than males.

Similar species: Easily identified. *Lasionycteris noctivagans* is superficially similar, but has a much smaller size and a lack of fur on its feet, ears, and ventral surfaces of its wing membranes.

Distribution: Widely distributed in Canada and the United States; only bat found on the Hawaiian Islands. Scattered records in Montana suggest a statewide distribution during the warmer months.

Habitat: Trees in both coniferous and deciduous forests provide suitable habitat for this species; blends in well with lichen-encrusted branches of northern forests.

Roosts: Roosts on foliage, usually near ends of branches on edge of clearings or fields; enters caves only very late in the summer.

Migratory characteristics: Fall migration takes place from mid-August to October. The majority are thought to winter in the southern United States and Mexico.

Echolocation characteristics: Similar to *Lasionycteris noctivagans*, but 3-5 kHz lower in frequency.

Conservation needs: Public education regarding the value of bats.

Townsend's Big-Eared Bat--*Plecotus townsendii*

MTHP rank: G4/S2 Species of Special Concern **USFS:** Sensitive **USFWS:** C2

Size:

Total length: 101.5 mm (4.00 in.)

Tail length: 44.8 mm (1.76 in.)

Forearm length: 42.6 mm (1.68 in.)

Wingspan: 290-310 mm (11.42-12.20 in.)

Weight: 6.9 g (male); 10.6 g (female)

Description: Has very large ears and two prominent glandular masses on dorso-lateral surface of snout; fur is uniform pale grey-brown to dark brown on back, slightly lighter below; hairs are grey at base, pale brown or darker brown on top; flight membranes and ears are brown; ears are very long, with tragus about one-third as long; foot is approximately half as long as tibia; calcar without keel and extending ca. halfway down edge of uropatagium; wings are relatively broad.

Similar species: *Antrozous pallidus* is larger with broader ears, light-yellowish fur pale at base, and no lumps on snout.

Distribution: British Columbia, western United States, and parts of Mexico. Known from the Custer and Gallatin National Forests in Montana. Scattered records indicate a limited statewide distribution; there are only 4 known breeding colonies but several confirmed hibernacula.

Habitat: Humid coastal forest and arid scrub and pine forest.

Roosts: Caves, abandoned mines, tree snags, and buildings are used for roosting.

Foraging: Near or among vegetation.

Maternity colonies: In warm caves.

Hibernacula: Caves and old mines within the summer range.

Migratory characteristics: Non-migratory.

Echolocation characteristics: Straight sweep from 40 kHz to ca. 28 kHz, lasting 6-7 milliseconds. No sign of an inflection point in call; call intensity is weak.

Conservation needs: The species is very sensitive to human disturbance. Summer roosts and hibernacula are particularly vulnerable to disturbance, which leads to abandonment and increased mortality. The disturbance often is not malefic or readily apparent. Simple repeated visitation by cavers may be significant. Local extinctions can result in areas with limited roost habitat or excessive disturbance. The low reproductive rate and limited roosting habitat require that the species and its habitat receive full protection; hibernacula and maternity roosting sites in particular need to be identified, and comprehensive inventories should be conducted.

Spotted Bat--*Euderma maculatum*

MTHP rank: G4/S1 Species of Special Concern

USFS: Sensitive

USFWS: C2

Size:

Total length: 110 mm (4.33 in.)

Tail length: 48 mm (1.89 in.)

Forearm length: 50 mm (1.97 in.)

Wingspan: ca. 350 mm (13.78 in.)

Weight: 14 g

Description: A large, spectacularly-colored bat; fur is black on dorsum with three large round white spots, ca. 15 mm in diameter, one on each shoulder and one on rump, smaller white patches at the posterior base of each ear; white ventrally; basal fur black throughout except for white areas at base of the ears; has circular, naked, non-glandular area on throat; ears are enormous, pinkish-grey in color, with transverse ribs extending to posterior border of auricle; membranes are thin, pliable, pinkish-red to grey-brown; last caudal vertebra is free of the uropatagium; calcar not keeled.

Similar species: None; *Euderma maculatum* cannot be confused with any other bat.

Distribution: One of the rarest mammal species in the United States, the center of its North American distribution appears to be in the southwestern United States, where it has most frequently been reported from California, Arizona, New Mexico, southern Colorado, and southern Utah. The species has also been reported in southern British Columbia, Idaho, Oregon, Nevada, Texas, and Mexico. Known from the southcentral portion of Montana; records exist from Big Horn, Carbon, and Yellowstone counties.

Habitat: Recorded from a wide range of habitats in the western mountain regions of North America, most often in rough, rocky, semi-arid, and arid terrain, varying from ponderosa pine forest to scrub country and open desert.

Roosts: In high cliffs, particularly fractured sedimentary surfaces.

Foraging: Forages over open forests and fields in drier ponderosa pine forests.

Migratory characteristics: No winter records are known for this area. The species may migrate south for the winter from the northern extent of its range.

Echolocation characteristics: This species has a loud high-pitched echolocation call that is clearly audible to the human observer at distances of 250 m or more. The call consists of a double or single steep frequency modulated pulse with a fundamental frequency sweeping from 12-6 kHz and is repeated 2-6 per second.

Conservation needs: Anecdotal evidence suggests that this species is highly sensitive to human disturbance. The greatest identified threat is disturbance or destruction of roosting habitat. Little is known regarding specific habitat requirements for foraging areas, although it is known that these bats feed on large nocturnal moths. The species is in need of additional study, and occupied habitats need to be identified and protected.

Big Brown Bat--*Eptesicus fuscus*

MTHP rank: G5/S4

USFS: None

USFWS: None

Size:

Total length: 115.3 mm (4.54 in.)

Tail length: 44.5 mm (1.75 in.)

Forearm length: 47.4 mm (1.87 in.)

Wingspan: 320-390 mm (12.60-15.35 in.)

Weight: 19.5 g

Description: Large size is a distinguishing factor; pelage is brown, paler on venter than above; hairs extend only slightly onto wing and tail membranes; face somewhat darker than rest of dorsum; dark-colored ears are of medium size, thick and hairless; tragus is relatively short (less than half the length of the ear) and blunt, and calcar is usually keeled; skull large, heavy, and flattened dorsally.

Similar species: Can be distinguished from all other species by its large size.

Distribution: Extends over most of North America from southeastern Alaska to northern South America and the Caribbean Islands. Widely distributed across Montana.

Habitat: Found in a variety of wooded and semi-open habitats. It is closely associated with buildings, and along with *Myotis lucifugus*, it is the most common bat in larger cities.

Roosts: Summer roosts are in buildings and natural sites such as hollow trees and crevices in rock faces.

Foraging: Forages over waterways, ponds, clearings in wooded areas, along edges of riparian woodlands, or around lighted areas in cities and towns.

Maternity colonies: Maternity colonies have been found in attics, barns, bridges, and occasionally in tree cavities.

Hibernacula: Caves and mines are used for hibernation, but many hibernate in buildings or other man-made structures such as sewers.

Migratory characteristics: Non-migratory; most hibernate in the vicinity of their summer haunts.

Echolocation characteristics: Call sweeps down to 28-33 kHz in first 1-3 milliseconds, terminating in a nearly constant-frequency tail lasting 2-7 milliseconds. Initial sweep is variable, but nearly always present.

Conservation needs: Public education regarding the value of bats.

Pallid Bat--*Antrozous pallidus*

MTHP rank: G5/S1 Species of Special Concern

USFS: Sensitive

USFWS: None

Size:

Total length: 118 mm (4.65 in.)

Tail length: 49 mm (1.93 in.)

Forearm length: 56 mm (2.20 in.)

Wingspan: 370-390 mm (14.57-15.35 in.)

Weight: 20.6 g

Description: A large, pale-colored, large-eared bat; females slightly larger than males; fur is relatively short and thin; hairs are yellowish with darker brown or grey tips; underparts are creamy white; patagia thick and leathery, pale brownish in color; ears are pale, extending 20 mm (0.78 in.) beyond the nose when pressed forward, not fused at their bases; tragus long (ca. one-third of ear length), straight, and slender with weakly serrated outer edge; snout truncate with prominent glandular swellings on either side, secretion with a strong distinctive odor; eye relatively large; wings broad; skull large with massive teeth, one upper incisor on each side.

Similar species: Not readily confused with any other species. *Plecotus townsendii* is smaller, has dark basal fur, and has prominent lumps on the snout.

Distribution: Western United States south to central Mexico. Montana records are from the south-central portion of the state in Carbon County.

Habitat: Inhabits arid areas with rocky outcroppings and a dominant vegetation of xerophytic shrubs, as well as adjacent dry forest communities. Forested habitat consists of riparian forest along lakeshores and streams, and dry forest dominated by ponderosa pine on the lower slopes.

Roosts: Preferred daytime roosts are in rock crevices and buildings. Night roosts include open shelters that are easily approached, such as porches, bridges, and cave or mine entrances.

Migratory characteristics: No winter records are known from our area; the species may migrate south for the winter.

Echolocation characteristics: Call sweeps from 49 or 55 to 26 kHz, lasting 5 milliseconds.

Conservation needs: Hibernacula and maternity roosts need to be identified and protected from disturbance, and any sightings of this species should be carefully documented. Mine entrances should be closed to human entry but gated to allow bat passage. Access roads to bat caves should be closed, and cave entrances should be protected from modification to natural vegetation and air flow/humidity; pesticide use around caves should be banned.

References:

Genter, D. L. 1989. Fringed Myotis, California Myotis, Spotted Bat, and Townsend's Big-Eared Bat. Pp. 100-104 in: Clark, T. W., A. H. Harvey, R. D. Dorn, D. L. Genter, and C. Groves, eds. *Rare, sensitive, and threatened species of the Greater Yellowstone Ecosystem*. Northern Rockies Conservation Cooperative, Montana Natural Heritage Program, The Nature Conservancy, and Mountain West Environmental Services. 153 pp.

Montana Natural Heritage Program. *Biological Conservation Data System, October 1992 edition*. The Nature Conservancy, Arlington, Virginia.

- Thomas, D. W., and S. D. West. 1989. *Sampling methods for bats*. Gen. Tech. Rep. PNW-GTR-243. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 20 pp.
- Smith, H. 1993. *Alberta mammals: an atlas and guide*. The Provincial Museum of Alberta. Edmonton, Alberta. 238 pp.
- van Zyll de Jong, C. G. 1985. *Handbook of Canadian mammals 2: Bats*. National Museum of Natural Sciences, National Museums of Canada. Ottawa, Canada. 212 pp.